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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,583	04/14/2004	Hyong-gu Lee	1572.1330	6235

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EXAMINER

CHEN, SOPHIA S

ART UNIT PAPER NUMBER

2852

DATE MAILED: 12/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Ek

<b>Office Action Summary</b>	<b>Application No.</b> 10/823,583	<b>Applicant(s)</b> LEE, HYONG-GU	
	<b>Examiner</b> Sophia S. Chen	<b>Art Unit</b> 2852	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10-24 and 30 is/are rejected.
- 7) ☒ Claim(s) 8, 9 and 25-29 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/14/04</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "gear cap and the end cap each comprise an electrode connected to the power supply to supply power to the heater" (claim 12) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
3. The disclosure is objected to because of the following informalities:
  - a. Page 7, paragraph [0033], line 4; "145" should be labeled as "45".
  - b. Page 7, paragraph [0035], line 6, "52" should be labeled as "53".
  - c. Page 8, paragraph [0039], line 3, "54" should be labeled as "45".Appropriate correction is required.

***Claim Rejections – 35 USC 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US Pat. Pub. No. US 2003/0039493 A1) in view of Sumino et al. (JP 01-057284 A)

Lee discloses an electrophotographic image forming apparatus (paragraph [0003]) including a fixing unit and a driver (an electric motor; paragraph [0044]) rotating the fixing unit, the fixing unit comprising: a heat roller assembly 110 comprising a heat roller 112 and a gear cap 130 coupled to a first end of the heat roller 112 and transmitting rotation to the heat roller 112 (paragraph [0044]); a pressing roller 190

Art Unit: 2852

pressing a recording medium 150 passing between the pressing roller 190 and the heat roller 112 toward the heat roller 112 (Figure 3); the gear cap 130 comprising an insertion portion (Figures 6A and 6B) inserted in the heat roller 112, and a gear portion 131 integrally provided adjacent to the insertion portion and rotated by the driver (Figures 4 and 6B); and the heat roller assembly 110 comprises an end cap 120 to a second end of the heat roller 112 (paragraph [0044] and Figure 4).

Lee differs from the instant claimed invention in not disclosing an elastic member coupling the gear cap with the heat roller; a pair of elastic member accommodating parts positioned in the outer circumferential surface of the insertion of the gear cap; and the end cap having an elastic member.

Sumino et al. discloses a gear cap coupled to a first end of a drum 1, the gear cap comprising an insertion portion 8, a gear portion 4, a pair of elastic member 7', and a pair of elastic member accommodating parts 9 (abstract and Figure 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the elastic members and elastic member accommodating parts as taught by Sumino et al. to the gear cap and end cap of Lee to firmly fix the roller and gear (or end) cap together (Sumino et al., abstract).

6. Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Sumino et al, as applied to claim 2 above, and further in view of Foltz (US Pat. No. 5,599,265).

Lee in view of Sumino et al., as discussed above, further discloses at least one of the elastic members 7' comprising an elastic portion accommodated in the elastic

Art Unit: 2852

member accommodating part 9 of the insertion portion 8 (Sumino et al., Figure 1); the heat roller 112 being formed of stainless steel, aluminum, or copper (Lee; paragraph [0043]); the heat roller 112 having a projection accommodating part 112a positioned in a lengthwise direction of the heat roller 112 (Lee; paragraph [0046] and Figure 8); and the gear cap 130 being provided with a projection 134 to be accommodated in the projection accommodating part (Lee; paragraph [0046] and Figure 6B).

Lee in view of Sumino et al. differs from the instant claimed invention in not disclosing the at least one of the pair of the elastic members comprising bending portions positioned on opposite ends of the elastic portion and a locking portion provided in an end of the bending portion and contacting the inner circumferential surface of the heat roller by an elasticity of the elastic portion; the locking portion is hook-shaped; and the locking portion comprises material with a hardness higher than material of the inner circumferential surface of the heat roller.

Foltz discloses an image forming apparatus comprising an end cap 116 coupled to a first end of a drum 20 (Figure 15); an elastic member (ring) 110 coupling the end cap 116 with the drum 20 (Figure 15); the elastic member 110 comprises an elastic portion 124 or 128, bending portions (Figure 15; between 132 and 128, and between 128 and 134), a locking portion provided in an end of the bending portion and contacting the inner circumferential surface of the drum 20 by an elasticity of the elastic portion (Figure 15; the edge of reference numeral 132), and the locking portion being hook-shaped (Figure 15); and the locking portion comprises material (steel, stainless steel,

Art Unit: 2852

etc.; column 9, lines 59-64) with a hardness higher than material of the inner circumferential surface 40 of the drum 20 (column 9, lines 21-27).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the locking portion, including the shape and material, of the elastic member as taught by Foltz to the elastic member of Lee in view of Sumino et al. to eliminate the need for gluing an end cap to the end of the heat roller (Foltz; column 2, lines 49-52).

7. Claims 10-14, 24, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Sumino et al.

Lee discloses a heat roller assembly 110 of an electrophotographic image forming apparatus including a driver (an electric motor; paragraph [0044]), the heat roller assembly 110 comprising: a heat roller 112; a gear cap 130 having an insertion portion (Figures 6A and 6B) inserted into a first end of the heat roller 112 and a gear portion 131 adjacent to the insertion portion and transmitting rotary motion from the driver to the heat roller assembly 110 (paragraph [0044] and Figure 6B); the heat roller assembly 110 further comprises a heater 113 disposed in the heat roller 112, a power supply 200, and an end cap 120 capping a second end of the heat roller 112 (paragraph [0044]); the gear cap 130 and the end cap 120 each comprises an electrode (a lead) 116 or (electrode) 210 connected to the power supply 200 to supply power to the heater 113 (paragraphs [0046] and [0047]); the end cap 120 and the heat roller 112 being integrally formed (Figure 4); an insertion portion inserted into a second end of the heat roller 112 to couple the end cap 120 to the second end of the heat roller 112 (Figures 5A and 5B);

Art Unit: 2852

the insertion portion comprises a projection 134 (Figure 6B); and the first end of the heat roller 112 having a projection accommodating part 112a accommodating the projection 134 when the gear cap 130 is inserted into the first end of the heat roller 112 (paragraph [0046]).

Lee differs from the instant claimed invention in not disclosing the gear cap having an elastic member accommodating part (being a recess); an elastic member; and the end cap having an elastic member accommodating part.

Sumino et al. discloses a gear cap coupled to a first end of a drum 1, the gear cap comprising an insertion portion 8, a gear portion 4, a pair of elastic member 7', and a pair of elastic member accommodating parts 9 (abstract and Figure 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the elastic members and elastic member accommodating parts as taught by Sumino et al. to the gear cap and end cap of Lee to firmly fix the roller and gear (or end) cap together (Sumino et al., abstract).

8. Claims 15-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Sumino et al. as applied to claim 10 above, and further in view of Foltz.

Lee in view of Sumino et al., as discussed above, further discloses the elastic members 7' comprising an elastic portion accommodated in the elastic member accommodating part 9 of the insertion portion 8 (Sumino et al., Figure 1); the elastic portion being arc-shaped (Sumino et al.; Figure 1); and the heat roller 112 being formed of stainless steel, aluminum, or copper (Lee; paragraph [0043]).

Lee in view of Sumino et al. differs from the instant claimed invention in not disclosing the a locking portion positioned at end of the bending portion and contacting an inner circumferential surface of the heat roller; the bending portion forms a pair positioned at opposite ends of the elastic portion; the locking portion forms a pair; the bending portion extends out of the elastic member accommodating part; the locking portion is hook-shaped; the locking portion forms an acute angle with respect to the inner circumferential surface of the heat roller in an inserting direction; the locking portion forms an obtuse angle with respect to the inner circumferential surface of the heat roller in a removing direction opposite the inserting direction; the locking portion has a hardness greater than a hardness of the inner circumferential surface of the heat roller; and the locking portion is made of steel.

Foltz discloses an elastic member 110 comprises an elastic portion 124 or 128, bending portions (Figure 15; between 132 and 128, and between 128 and 134), a locking portion provided in an end of the bending portion and contacting the inner circumferential surface of the drum 20 by an elasticity of the elastic portion (Figure 15; the edge of reference numeral 132), and the locking portion being hook-shaped (Figure 15); the bending portion extends out of an elastic member accommodating part (Figure 15); the locking portion is hook-shaped (Figure 15); the locking portion forms an acute angle (Figure 15, the angle along reference numerals 128, 124 and the outer surface of hub 112) with respect to the inner circumferential surface of a drum 20 in an inserting direction (Figure 15, toward the left of the drawing); the locking portion forms an obtuse angle (Figure 15, the angle along reference numerals 128, 124, and 132) with respect to

Art Unit: 2852

the inner circumferential surface of the drum 20 in a removing direction opposite the inserting direction; and the locking portion comprises material (steel, stainless steel, etc.; column 9, lines 59-64) with a hardness higher than material of the inner circumferential surface 40 of the drum 20 (column 9, lines 21-27).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the locking portion, including the shape and material, of the elastic member as taught by Foltz to the elastic member of Lee in view of Sumino et al. to eliminate the need for gluing an end cap to the end of the heat roller (Foltz; column 2, lines 49-52).

#### ***Allowable Subject Matter***

9. Claims 8, 9, and 25-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Other Prior Art***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Swain (US Pat. No. 5,461,464) discloses an image forming apparatus comprising a drum, a gear cap having a deformable member, and an end cap.

Wagner et al. (US Pat. No. 5,579,093) discloses an image forming apparatus comprising a drum, a gear cap having a plurality of elastic members, and the gear cap being inserted into the drum.

Lee et al. (US Pat. Pub. No. US 2003/0091374 A1) discloses an image forming apparatus comprising a drum, a gear cap having a deformable member, and an end cap.

Jaskowiak (US Pat. No. 6,963,719 B2) discloses an image forming apparatus comprising a fusing roller, a gear cap having an elastic member, and the gear cap being inserted into the fusing roller.

Sumino et al. (JP 02-205882 A) discloses a cylinder, a gear cap being inserted into the cylinder, and the gear cap having elastic members and elastic member accommodating portions.

Takano (JP 06-110361 A) discloses an image forming apparatus comprising a drum, a gear cap having a plurality of elastic members, and the gear cap being inserted into the drum.

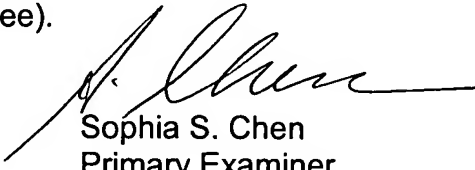
### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sophia S. Chen whose telephone number is (571) 272-2133. The examiner can normally be reached on M-F (7:00-3:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Arthur Grimley can be reached on (571) 272-2136. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2852

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sophia S. Chen  
Primary Examiner  
Art Unit 2852

Ssc  
December 5, 2005